

No-Till

Presented By:
Hillsboro FFA

Is NO-TILL the right option?

Advantages

- **MOISTURE CONSERVATION**
- **IMPROVED YIELDS**
- **REDUCED LABOR**
- **MORE TIME FOR MANAGEMENT**
- **LESS FUEL USED**
- **EQUIPMENT SAVINGS**
- **NO INCORPORATION TILLAGE**
- **EROSION CONTROL**

Drawbacks

- **SOIL INCORPERATED HERBICIDES ARE NOT USED**
- **KNOWLEDGE OF WEEDS IS REQUIRED**
- **SPREADING OF STRAW AND CHAFF TAKES KNOWLEDGE AND EXPERIENCE**
- **NO-TILL LAND WILL NOT BE AS SMOOTH AS A CONVENTIONALLY TILLED FEILD**

How To Start

- Start with fields where the straw and chaff from the previous crop was properly spread -or go to a low residue field such as a canola or flax field.
- Use seeding equipment that will do a good job.
- Since tillage is being eliminated, know how to use the herbicides that will replace it.
- Specialized drills may be available on a rental or demonstration basis - try to gain experience without making a large capital investment

How To Start

- Attend an annual no-till workshops and conferences to take full advantage of the newest research and technology. Become a member of a no-till organization.
- Talk to experienced zero till farmers. Learn from their successes and mistakes.

Soil Management

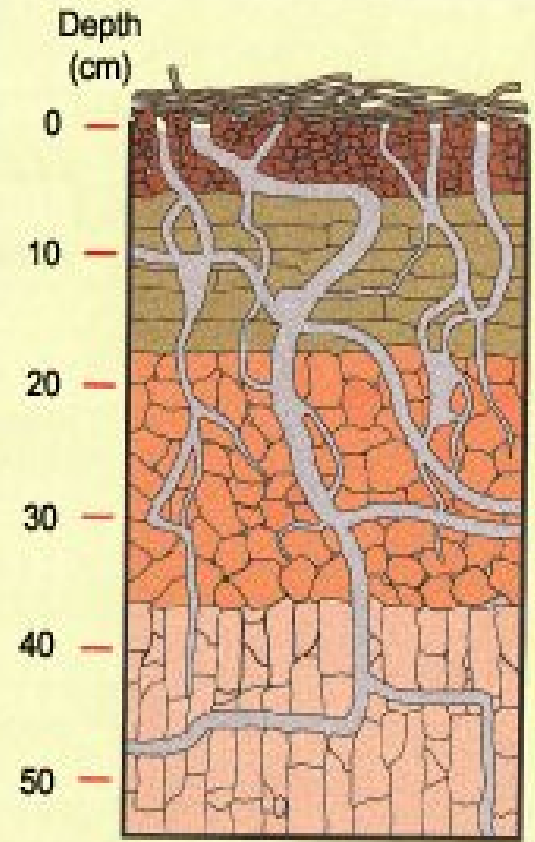
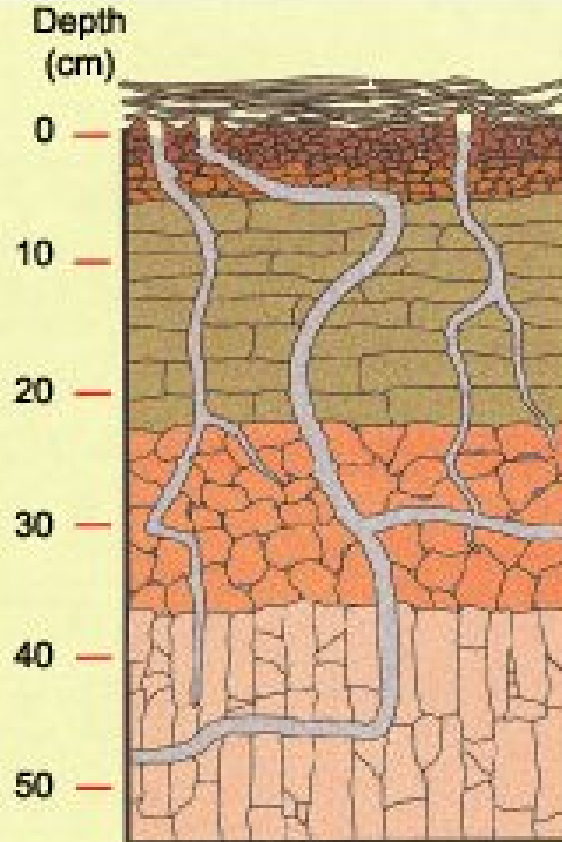
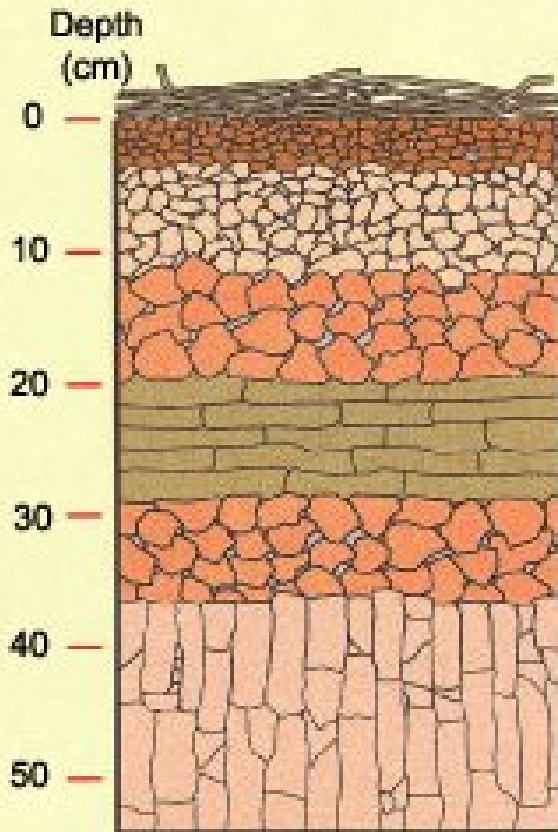
- Top layer is active biologically and produces relatively stable aggregates.
- Below surface layer soil will take on a platy appearance, while clay soils will have a granular layer over them.
- Erosion may be slight in the first few years and conditions would not be ready for soil animal activity.

Soil Management

- 3 Years

5 Years

10 + Years



No-Till Soil

- Standing stubble reduces the amount of water which runs off a field. Not only does this reduce erosion, but it also holds more water on the field to soak into the soil.
- Precipitation (rain and snowfall) tends to stay where it falls. Reduced snow drift and water movement means that every part of a field -including slopes- enjoys the benefits of water infiltration.

No-Till Soil

- Once the water has soaked into the soil - the mulch at the surface in a zero till field reduces water loss from evaporation.
- When tillage is eliminated, soil moisture loss is reduced. Cultivating dries the soil down to the depth of tillage. This amounts to as much as 1/2 inch of lost moisture per tillage operation.

No-Till Fields



A local no-till farmer, Dean Suderman's field shows how crop rotation is an important part of no-till farming.

No-Till Fields



Crop residue is one of the key components of no-till farming. These pictures show how different types of residues can protect the soil from erosion.

Planting Equipment

No-till equipment is usually heavier than conventional-till equipment.



No-till equipment is designed to cut through the heavy residue that accumulates over many years of no-till farming.

Planting Equipment



Dean Suderman uses a planter that can plant on 15 or 30 inch rows. A tank is also pulled behind this planter to apply liquid fertilizer directly into the seed bed.

Spraying Equipment



All no-till farming requires the application of chemicals to control weeds and pests. Dean Suderman has minimized his input costs by building his own sprayer from an old farm pick-up. This spraying unit is a big time saver to Dean because he can get to far away fields quickly. This unit is also equipped with GPS technology that will actually steer the pick-up. This minimizes operator error in the over application of chemicals.

Cover Crops

- Cover crops can help to make a no-till system work.
- Reduces erosion and run off.
- Where residue cover is consistently high, cover crops may simply not be necessary.

Crop Rotation

- In No-Till there are still the rotations of crops that are commonly used in a tillage farming system.
- Using the different crops in different seasons give you a better cover for upcoming crops.

Weed Control

- Greatest obstacle of No-Till
- In the first year of no-till, annuals and perennials can be a problem.
- In Year 2, the number of annual weed seeds is reduced by natural and cultural means.
- In Year 3, the perennials, biennials and winter annuals peak. But with burndown control, their numbers are also reduced.

Weed Control Strategies

- Use weed-free seed sources. Well-cleaned or certified seed is best.
- Control weed sources at field perimeters, but be careful not to kill sod borders or wildlife habitat in fencerows.
- Scout fields and keep records: help prevent local problems from spreading.

Diseases

- Diseases may have less impact on no-till crops.
- Good soil management reduces incidence of disease
- Crop rotations break disease cycles
- Soil conditions such as seedbed structure will improve in no-till over time, and with that comes a better aerated growth environment for plant roots.

Insect Management

- The increased diversity of animal life attracted to no-till fields also helps to keep populations of any one species in control.
- However, with the slightly different "habitat" found in no-till, some types do better and others do not fare as well.
- General control methods are similar to any other cropping system.

Crop Varietal Selection

- High yield and suitable heat unit ratings remain important.
- Generally, look for varieties that can withstand and perform in the tougher growing conditions afforded by no-till.
- No-till variety plots should be observed early in the season to evaluate emergence and early growth.

Challenges

- Zero tillage requires a systems approach to crop production.
- No-till farmers have discovered that they must develop the system which fits their local conditions.
- Successful no-till crop production requires attention to plant diseases.
- Adopting a zero till system depends upon a willingness to change and adapt.

THANK YOU!



Sources

- No-till.org
- www.mandakzerotill.org/ztindex.html
- www.gov.on.ca/OMAFRA/english/environment/no_till/no_till.htm